REMARKS

Reconsideration of the application is requested.

Claims 1-26 remain in the application. Claims 1-26 are subject to examination. Claims 11 and 12 have been amended.

Under the heading "Claim Objection" on page 2 of the above-identified Office Action, the Examiner objected to claim 3. The Examiner stated that the term "left surround" was misspelled as "lest surround".

Applicants appreciate the effort of the Examiner in indicating an alleged informality, however, applicants' and counsel's copy of claim 3 shows that the term left surround was properly spelled. There indeed seems to have been some sort of an error in the patent database. If the Examiner maintains the rejection, counsel will be happy to go through the motions of amending the claim in the next paper, but as far as applicant can tell, left surround was not misspelled in the submitted paper.

Under the heading "Claim Rejections – 35 USC § 112" on page 2 of the above-identified Office Action, claims 11 and 12 have been rejected as being indefinite under 35 U.S.C. § 112, second paragraph.

More specifically, the Examiner states that there is insufficient antecedent basis for coherence measure in claim 11 and weighing factor in claim 12.

Applicants appreciate the indication of the informalities. Claim 11 has been amended to depend from claim 2, and claim 12 has been amended to depend from claim 11.

It is accordingly believed that the claims meet the requirements of 35 U.S.C. § 112, second paragraph. The above-noted changes to the claims are provided solely for clarification or cosmetic reasons. The changes are neither provided for overcoming the prior art nor do they narrow the scope of the claim for any reason related to the statutory requirements for a patent.

Under the heading "Claim Rejections – 35 USC § 103" on page 3 of the above-identified Office Action, claims 1, 2, 4-7, 9-21, and 25 have been rejected as being obvious over Patent Application Publication U.S. 2003/0236583 A1 to Baumgarte et al. and Patent Application Publication U.S. 2001/0014160 to Maejima and U.S. Patent No. 7,006,636 B2 to Baumgarte et al. under 35 U.S.C. § 103. Applicants respectfully traverse.

Patent Application Publication U.S. 2003/0236583 A1 to Baumgarte et al. discloses an application of the Bee technique to a stereo input signal consisting of a left channel L and a right channel R. First of all, as becomes clear from Fig. 1, BCC parameters are derived from the two input channels L, R and these BCC parameters are transmitted to the BCC synthesizer. Importantly, the BCC cues are only calculated from the high frequency portions of Land R.

Furthermore, the original channels Land R are also modified in that the high frequency component of these signals are identical to each other and only the low frequency components of the original left channel and the original right channel are included in the signal 11 B subsequent to block 110. These hybrid left and right signals are input into a stereo audio coder. The bit-stream 106, therefore, includes a stereo-encoded version of the hybrid channels Land R at 118 in Fig. 1.

On the decoder-side in Patent Application Publication U.S. 2003/0236583 A1 to Baumgarte et al., the low frequency portion will be reconstructed without the BCC parameters and the high frequency portion is reconstructed using the BCC parameters. This is outlined in paragraphs [0022] and [0024].

Claims 1, 21, and 25 include the limitation: "the plurality of channels including at least two original channels, which are defined as being located at one side of an assumed listening position". Claims 22 and 26 also define two original channels located at one side of an assumed listening position.

Patent Application Publication U.S. 2003/0236583 A1 to Baumgarte et al. does not disclose that feature.

Importantly, this reference only discloses Land R, which are both located at different sides of an assumed listener position.

In view of this, Patent Application Publication U.S. 2003/0236583 A1 to Baumgarte et al. also does not disclose the rest of the first paragraph of claim 1, since this reference does also not disclose having two output channels corresponding to these two input channels. Instead, as outlined in Fig. 1, for example, the output of the BCC synthesizer is only L' and R', which are again located on different sides, other than at one side as defined in the first paragraph of claim 1.

Furthermore, this reference does also not disclose the use of an input signal including a first input channel and a second input channel derived from original multi-channel signal as defined in claim 1, first paragraph. Instead, there is only a stereo signal L, R, which is derived from nothing. Patent Application Publication U.S. 2003/0236583 A1 does not teach a “multi-channel signal" from which the input signal is derived.

Furthermore, as already acknowledged by the examiner, Patent Application Publication U.S. 2003/0236583 A1 does not disclose any of the features in the second paragraph of claim 1.

In view of this, it is simply not possible for Patent Application Publication U.S. 2003/0236583 A1 to disclose any features of the last paragraph of claim 1. Claim 1 is clearly directed to the use of base channels, which are calculated in the second paragraph of claim 1. Since Patent Application Publication U.S.

2003/0236583 A1 does not at all calculate any base channels, this reference can automatically not disclose the features in the last paragraph of claim 1.

Additionally, the Examiner refers to Patent Application Publication U.S. 2001/0014160 to Maejima. This reference discloses receiving a left signal Lt and a right signal Rt, as illustrated in Fig. 2. These two signals are input into a virtualizer circuit which is not further described in this reference, but which is simply seen as a kind of a "black box". This "black box" 2 receives - in addition to Lt and Rt, a center channel, which corresponds to the sum of the left input channel and the right input channel. Furthermore, this virtualizer circuit also receives a surround channel S which corresponds to the difference between both input channels. Based on these four channels L, R, C, S, the virtualizer circuit performs a downmix into two front channels, L, R, which is outlined in paragraph [0046] of this reference. This reference furthermore states that one should manipulate the center channel and the surround channel by the variable gain devices 4, 6, which can be seen in Fig. 2.

When this reference is compared to claim 1, it discloses a way for generating L, R, C, S, to be input into the virtualizer circuit 2, based on original input signals, Lt and Rt.

Applicants want to emphasize that the operation of the virtual circuit cannot be compared to claim 1, since the output of virtualizer circuit block 2 is only two channels, while the multi-channel output signal as defined by the apparatus in

claim 1 represents an up mixing operation rather than the downmixing operation performed by the virtualizer circuit.

Importantly, however, the inputs Lt, Rt are not at all derived from the original multi-channel signal having a plurality of channels. Instead, there is nothing from which the input channel Lt, Rt is derived.

Furthermore, we once again do not have a situation that two original channels are defined as being located at one side of the assumed listener position. Instead, Lt and Rt are located at different sides.

Furthermore, Patent Application Publication U.S. 2001/0014160 to Maejima is completely silent on using parametric side information describing interrelations between original channels. Patent Application Publication U.S. 2001/0014160 to Maejima specifically teaches that a main feature is that it works without any parametric side information. Patent Application Publication U.S. 2001/0014160 to Maejima even states that it has to be as simple as possible. Therefore, it would be contrary to the teaching of Patent Application Publication U.S. 2001/0014160 to Maejima to use this method in the context of a parametric side information upmix situation. Please refer to paragraphs [0029] and [0030] of Patent Application Publication U.S. 2001/0014160 to Maejima.

In addition, Patent Application Publication U.S. 2001/0014160 to Maejima does not disclose anything with respect to base channels for the purpose of a

synthesizing operation. Even if one would consider that the first base channel corresponds to C and the second base channel corresponds to S, or the base channel corresponds to any of the base channels input into the virtualizer circuit, then this reference still does not disclose anything with respect to the means for synthesizing as described in the last paragraph of claim 1, since in claim 1, Land R are definitely located on the same side with respect to the assumed listener position. In contrast, in Patent Application Publication U.S. 2001/0014160 to Maejima, Land R are located on opposite sides.

Patent Application Publication U.S. 2001/0014160 to Maejima does not disclose any features from the first paragraph of claim 1 and the last paragraph of claim 1.

U.S. Patent No. 7,006,636 B2 to Baumgarte et al. discloses a coherent-based audio coding and synthesis system. Again, only a stereo procedure is disclosed, in which there is a single downmix channel which is a mono-channel as explicitly illustrated at the output of the adder 306 in Fig. 3. Fig. 5 illustrates that only this mono signal is transmitted from an encoder to a decoder and is processed there together with BCC parameters.

In view of this, U.S. Patent No. 7,006,636 B2 to Baumgarte et al. does not disclose any of the features of claim 1, since there is only a stereo setup, rather than a multi-channel original input signal having at least two original channels on the same side with respect to the assumed listener position. U.S. Patent

No. 7,006,636 B2 to Baumgarte et al. only discloses a left channel or a right channel, but no surround channels.

Furthermore, U.S. Patent No. 7,006,636 B2 to Baumgarte et al. does not disclose any other feature in the first paragraph of claim 1 for the same reasons.

In addition, the means for determining is not at all disclosed, since this feature relies heavily on the fact that there are two input channels, rather than a mono input channel.

In view of this, U.S. Patent No. 7,006,636 B2 to Baumgarte et al. also does not disclose the means for synthesizing.

Importantly, applicants believe that one of ordinary skill in the art would never combine the three cited references, since the references are orthogonal to each other, or would result in a non-useful output, when combined with each other.

Hereinafter, let us refer to the cited prior art as follows:
D1 is Patent Application Publication U.S. 2003/0236583 A1 to Baumgarte et al.;
D2 is Patent Application Publication U.S. 2001/0014160 to Maejima; and
D3 is U.S. Patent No. 7,006,636 B2 to Baumgarte et al..

First of all, let us assume that we combine document D3 with document D1.

D3 teaches downmixing into a single mono signal. Document D1 teaches downmixing into an encoded stereo signal until a certain threshold frequency (paragraph [0022] of document D1) and above this frequency, into a mono signal. If one of ordinary skill in the art were to combine document D3 into document D1, this would mean that one would only use a single mono signal, which is against the teaching of document D1 stating that it is better to use a stereo encoded signal until a certain threshold frequency.

In view of this, one of ordinary skill in the art would not combine documents D1 and D3.

Furthermore, one of ordinary skill in the art would also not combine document D2 with either document D1 or D3, since document D2 discloses using a completely non-parametric upmix based on the sum operation 3 and a difference operation 5 as shown in Fig. 2 of document D2. Regarding the downmix from L, R, C, S, into Land R, nothing is disclosed at all, since the virtualizer circuit 2 is simply a black box without any certain detailed explanations on its Internal structure.

Furthermore, document D2 states that such a device has to be as simple as possible which means that such a device must be implemented without any

parametric side information describing inter-relations between original channels of the multi-channel's original signals.

Therefore, one of ordinary skill in the art would not combine any of the three references cited by the US Examiner.

On page 3, sixth line from the bottom of the Office Action, the Examiner states what document D1 does not disclose. The Examiner forgot to mention the limitation that there are at least two original channels, which are defined as being located at one side of an assumed listener position. Document D1 only discloses a stereo situation having a single left channel and a single right channel, which is not within the definition as discussed above.

Additionally, document D1 does not disclose the means for determining, it also does not disclose a means for synthesizing output channels corresponding to input channels which are on the same side. Instead document D1 only discloses synthesizing a left output channel L' and a right output channel R' which are definitely on different sides, while, as defined in claim 1, the first output channel and the second output channel are located on the same side with respect to the listening position, and correspond to the first original channel and the second original channel as defined in the first paragraph of claim 1.

Regarding document D2, the Examiner states that document D2 discloses the means for determining a first base channel and a second base channel feature, and states "base channel with different combinations". However, applicants do not understand the Examiner's reasoning with respect to the teaching in paragraph [0025], since this reference does not disclose any base channels. When the Examiner feels that operations 3 and 5 is a kind of an upmix, then the first base channel Lt and the second base channel Rt are always the same for both operations 3 and 5.

Further, any channels disclosed by document D2 are not at all useful for any kind of signal synthesis, which would produces the two output channels as defined in the last paragraph of claim 1.

At the bottom of page 2 of the Office Action, the Examiner acknowledges that neither document D1 nor D2 mention anything with respect to channels being on the same side of an assumed listener position. Now the Examiner reverts to document D3 and points to column 1, lines 2-60. However, this passage also only discloses that a person "simultaneously hears audio signals generated by one or more different audio sources located at one or more different positions relative to the person". This, however, only states that in natural environment, when you look out of your window, you hear several sound sources to the left of your nose and several sound sources to the right of your nose. This, however, has nothing to do with any apparatus for constructing a multi-channel output signal as defined in claim 1.

Furthermore, there is no teaching relating how one of ordinary skill in the art should apply this teaching in document D3 to document D1 or document D2 to provide any useful output. The only thing that document D3 teaches is that all these different audio sources mentioned in column 1, line 34, finally possibly end up in a left signal received by a human being with a left ear and in a right signal perceived by the human being with a right ear. However, claim 1 clearly states that there has to be original channels, from which the input channel is derived, which are located at one side of an assumed listener position. This limitation is not at all disclosed in document D3.

Finally, regarding the synthesizer feature, the Examiner simply states that this feature is a combined teaching of all three references. Again, the Examiner points to channels L, R which are completely different from the defined first output channel and second output channel, which are on the same side, since they have to correspond to the first original channel and the second original channel.

Therefore, even a combination of the three references will not result in the inventive trick underlying in the use of two transmitted channels (two input channels); deriving two different base channels from these two input channels and synthesizing two output channels which are on the same side with respect to the assumed listening position using these two different base channels.

The preceding argument has been made mainly with reference to claim 1, however, claims 21 and 25 are patentable for similar reasons.

Under the heading "Claim Rejections – 35 USC § 103" on page 14 of the above-identified Office Action, claims 22-24 and 26 have been rejected as being obvious over Patent Application Publication U.S. 2003/0236583 A1 to Baumgarte et al. and U.S. Patent No. 7,006,636 B2 to Baumgarte et al. under 35 U.S.C. § 103. Applicants respectfully traverse.

Importantly, document D1 receives a two-channel input signal having channels L and R, and outputs a two-channel hybrid stereo signal having a first hybrid channel L and a second hybrid channel R. Importantly, the high frequency mono part is added to both channels L and R at 118. Therefore, it appears that the Examiner is also not correct in stating that document D1 discloses the first paragraph of claim 22.

The same is true for the second paragraph of claim 22. applicants do not understand what the Examiner means by "mono two components", since a mono channel is a single channel, while claim 22 states that one has to calculate a first downmix channel and a second downmix channel. Please note that there is one input channel L into the upper Fast Fourier Transform box, and there is only a single channel input in to the lower Fast Fourier Transform box.

Analogously, the output of Fig. 2 only has a single hybrid left channel and a single hybrid right channel.

Therefore, Applicants do not understand how the Examiner concludes that there is a downmix.

Since claim 22 defines two downmix channels and also defines that the number of original channels have to be higher than two, document D1 would have to show at least three input channels to be downmixed into two downmix channels, but there is no such teaching.

Additionally, claims 22 and 26 specify that the two original channels are located at one side of an assumed listener position.

The Examiner refers to document D1, but document D1 does not disclose that the two original channels are located at one side of an assumed listener position.

Neither document D1 nor D2 teach that the original channels are located at one side of an assumed listener position. D1 nor D2 teach the calculation of a coherence measure between these two original channels as defined in the penultimate paragraph of claim 22.

Finally, the last paragraph of claim 22 includes a feature that the output signal does not include any coherence measure between channels located at different sides of the assumed listener position. On page 15 of the Office Action the Examiner repeats that document D3 discloses something with respect to a multi-channel scenario, however, applicants believe that this statement is absolutely incorrect.

On page 16 of the Office Action, the Examiner only asserts that the feature that the output signal does not include any coherence measure between channels located at different sides of the assumed listener position, while a coherence measure between two original channels which are located at one side of the assumed listener position is included in the output signal. The Examiner, however, does not give any passage in document D1 or document D3, which would prove this assertion.

Under the heading "Claim Rejections – 35 USC § 103" on page 17 of the above-identified Office Action, claims 3 and 8 have been rejected as being obvious over Patent Application Publication U.S. 2003/0236583 A1 to Baumgarte et al. and Patent Application Publication U.S. 2001/0014160 to Maejima and U.S. Patent No. 7,006,636 B2 to Baumgarte et al. and further in view of Patent Application Publication U.S. 2003/0210794 A1 to Sato et al. under 35 U.S.C. § 103. Applicants respectfully traverse.

Claims 3 and 8 are patentable for the reasons specified above with regard to claim 1.

It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claims 1, 21, 22, 24, 25, or 26. Claims 1, 21, 22, 24, 25, or 26 are therefore, believed to be patentable over the art. The dependent claims are believed to be patentable as well because they all are ultimately dependent on claim 1 or 22.

In view of the foregoing, reconsideration and allowance of claims 1-26 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate receiving a telephone call so that, if possible, patentable language can be worked out.

Please charge any fees that might be due with respect to Sections 1.16 and 1.17 to the Deposit Account of Lerner Greenberg Stemer LLP, No. 12-1099.

Respectfully submitted,

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